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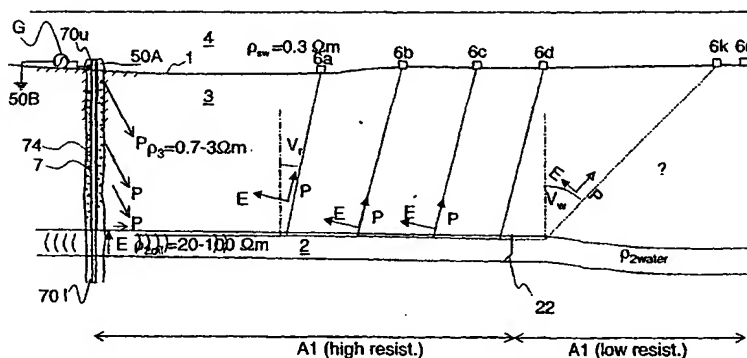
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(54) Title: A METHOD FOR MONITORING A HIGH-RESISTIVITY RESERVOIR ROCK FORMATION



(57) Abstract: A method for monitoring a high-resistivity reservoir rock formation (2) below one or more less resistive formations (3), comprising the following steps: Transmitting an electromagnetic signal (S) propagating from near a seafloor or land surface (1) by means of an electromagnetic transmitter (5) powered by a voltage signal generator (G). The electromagnetic signal (S) propagates from the seafloor (1) and is guided along a conductive string (7) to the high-resistive formation (2), and propagates as a guided-wave electromagnetic signal ( $S_2$ ) at a relatively higher speed ( $V_2$ ) inside the high-resistivity formation (2) than a propagation speed ( $V_3$ ) in the less resistive formations (3). The guided-wave electromagnetic signal ( $S_2$ ) gives rise to an upward refracting electromagnetic signal ( $R_3$ ) having the relatively lower propagation speed ( $V_3$ ) in the less resistive formations (3) and having an exit angle nearer to the normal N to the interface between said high-resistivity formation (2) and the lower-resistivity formation (3), and gives rise to a steeply rising refraction wave front ( $F_3$ ). The refracted electromagnetic wave front ( $F_3$ ) comprising refracted electromagnetic signals ( $R_3$ ) is detected along an array of sensor antennas (6a, 6b, 6c, ..., 6k, ..., 6n) along the seafloor, the array having a direction away from the transmitter (5). In a preferred embodiment of the invention, the electromagnetic transmitter (5) comprises an antenna (50) transmitting the electromagnetic signal (S) to an upper end (70U) of an electrically conductive string (7), e.g. a steel casing or liner, the upper end (70U) being arranged near said seafloor (1).

ATTACHMENT "G"

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